SEQUENCE LISTING

<110> Allen, Steve
Kinney, Tony
Miao, Gou-Hua
Orozco, Buddy

<120> PLANT BIOTIN SYNTHASE

<130> BB1429 US NA

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<150> 60/172929
<151> December 21, 1999

<160> 36

<170> Microsoft Office 97

<210> 1
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<213> Hordeum vulgare

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<212> PRT
<213> Hordeum vulgare

<220>
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<222> (131)

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Phe Ala Ser Ala Val Ser Ala Ala Pro Phe Ser Ser Val Ser Ala Ala
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Ala Ala Glu Ala Glu Arg Ala Val Arg Asp Gly Pro Arg Asn Asp Trp
35 40 45

Thr Arg Pro Glu Ile Gln Ala Ile Tyr Asp Ser Pro Leu Leu Asp Leu
50 55 60

Leu Phe His Gly Ala Gln Val His Arg Asn Val His Lys Phe Arg Glu
65 70 75 80

Val Gln Gln Cys Thr Leu Leu Ser Ile Lys Thr Gly Gly Cys Ser Glu
85 90 95

Asp Cys Ser Tyr Cys Pro Gln Ser Ser Arg Tyr Ser Thr Gly Leu Lys
100 105 110

Ala Glu Lys Leu Met Lys Lys Asp Ala Val Leu Glu Ala Ala Lys Lys
115 120 125

Ala Lys Xaa Ala Gly Ser Thr Arg Phe
130 135

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<212> DNA
<213> Zea mays

<220>
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<213> Zea mays

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<222> (48)..(49)

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20 25 30

Arg Ala Ile Arg Asp Gly Pro Arg Asn Asp Trp Ser Arg Pro Glu Xaa
35 40 45

Xaa Ala Val Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Xaa
50 55 60

Gln Ser Ser Arg Tyr Asn Thr Gly Leu Lys Gly Gln Lys Leu Met Asn
65 70 75 80

Lys Tyr Ala Val Leu Gly Ala Ala Lys Lys Xaa Lys Glu Ser Gly Lys
85 90 95

Gln Pro Phe Leu His Gly
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<212> DNA
<213> Zea mays

<220>
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tatcatggcc ttgatgctgc tagcgcgcaa cctgcgctcc cgcctccgcc caccgctcgc 180
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<213> Zea mays

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<222> (89)

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Pro Leu Ala Ala Ala Ala Xaa Phe Ser Ser Ala Ala Ala Glu Ala Glu
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Arg Ala Ile Arg Asp Gly Pro Arg Asn Asp Trp Ser Arg Pro Glu Ile
35 40 45

Gln Ala Val Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Ala
50 55 60

Gln Val His Arg Asn Val His Xaa Ser Arg Glu Val Gln Gln Cys Thr
65 70 75 80

Leu Leu Ser Ile Lys Thr Gly Gly Xaa Ser Glu Asp Cys Ser Tyr Cys
85 90 95

Pro Gln

<210> 7
<211> 1152

<212> DNA
<213> Zea mays

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atacaacact ggattgaagg cccaaaaatt gatgaacaaa tatgctgtct tggaagcagc 480
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<212> PRT
<213> Zea mays

<400> 8
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Pro Leu Ala Ala Ala Ala Ala Phe Ser Ser Ala Ala Ala Glu Ala Glu
20 25 30

Arg Ala Ile Arg Asp Gly Pro Arg Asn Asp Trp Ser Arg Pro Glu Ile
35 40 45

Gln Ala Val Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Ala
50 55 60

Gln Val His Arg Asn Val His Lys Phe Arg Glu Val Gln Gln Cys Thr
65 70 75 80

Leu Leu Ser Ile Lys Thr Gly Gly Cys Ser Glu Asp Cys Ser Tyr Cys
85 90 95

Pro Gln Ser Ser Arg Tyr Asn Thr Gly Leu Lys Ala Gln Lys Leu Met
100 105 110

Asn Lys Tyr Ala Val Leu Glu Ala Ala Lys Lys Ala Lys Glu Ser Gly
115 120 125

Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg
130 135 140

Lys Ser Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Glu Ile Arg Gly
145 150 155 160

Met Gly Met Glu Val Cys Cys Thr Leu Gly Met Ile Glu Lys Gln Gln
165 170 175

Ala Glu Glu Leu Lys Lys Ala Gly Leu Thr Ala Tyr Asn His Asn Leu
180 185 190

Asp Thr Ser Arg Glu Tyr Tyr Pro Asn Ile Ile Thr Thr Arg Ser Tyr
195 200 205

Asp Asp Arg Leu Gln Thr Leu Glu His Val Arg Glu Ala Gly Ile Ser
210 215 220

Ile Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu Ala Glu Glu Asp Arg
225 230 235 240

Val Gly Leu Leu His Thr Leu Ala Thr Leu Pro Thr His Pro Glu Ser
245 250 255

Val Pro Ile Asn Ala Leu Val Ala Val Lys Gly Thr Pro Leu Glu Asp
260 265 270

Gln Lys Pro Val Glu Ile Trp Glu Met Ile Arg Met Ile Ala Thr Ala
275 280 285

Arg Ile Thr Met Pro Lys Ala Met Val Arg Leu Ser Ala Gly Arg Val
290 295 300

Arg Phe Ser Met Pro Glu Gln Ala Leu Cys Phe Leu Ala Gly Ala Asn
305 310 315 320

Ser Ile Leu Ala Gly Glu Lys Leu Leu Thr Thr Ala Asn Asn Asp Phe
325 330 335

Asp Ala Asp Gln Ala Met Phe Lys
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<211> 562
<212> DNA
<213> Argemone mexicana

<220>
<221> unsure
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gagagctcgt cttcgacctt tgattttcat ttctacattt tcttctctct catcatcttc 180
ttcttcttca gctgctgctg ttcaagcaga aagaacgatt aaagaaggtc caagaaacga 240
ttggagcaga gatgaaatta aatcggttta tgattctcca gttctcgatc ttctcttcca 300
tgcagctcaa gtccatagac atgctcacaa cttcagggaa gtgcagcaat gtactcttct 360
ctctgttaag acaggtgggt gcagtgaaga ttgttcatat tgtccacaat cttccaggta 420
tgacactgga gtgaaagccc aaaagctgat gaacaaggga cgcagttctg caaggaagca 480
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tacaatgggg aangaagaac aa 562

<210> 10
<211> 119

<212> PRT
<213> Argemone mexicana

<400> 10
Met Leu Lys Val Gln Ser Leu Arg Ala Arg Leu Arg Pro Leu Ile Phe
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Ile Ser Thr Phe Ser Ser Leu Ser Ser Ser Ser Ser Ser Ser Ala Ala
20 25 30

Ala Val Gln Ala Glu Arg Thr Ile Lys Glu Gly Pro Arg Asn Asp Trp
35 40 45

Ser Arg Asp Glu Ile Lys Ser Val Tyr Asp Ser Pro Val Leu Asp Leu
50 55 60

Leu Phe His Ala Ala Gln Val His Arg His Ala His Asn Phe Arg Glu
65 70 75 80

Val Gln Gln Cys Thr Leu Leu Ser Val Lys Thr Gly Gly Cys Ser Glu
85 90 95

Asp Cys Ser Tyr Cys Pro Gln Ser Ser Arg Tyr Asp Thr Gly Val Lys
100 105 110

Ala Gln Lys Leu Met Asn Lys
115

<210> 11
<211> 1340
<212> DNA
<213> Glycine max

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gttgttgtct gttgtctctg tcgtgtctat attcgcagat ctctcactca ttctctgttg 180
tttctctgcc caacttcgaa ttcgaaagca aaaacatgtt tttggcgaga cccatttcc 240
gagcaccctc cctttgggcg ttgcactctt cctacgcgta ttcctctgcc tcagcagctg 300
caattcaagc tgagagagcc atcaaagaag gacccagaaa cgattggagc cgagaccaag 360
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ttctcactac tcctaacaat gattttgatg ctgatcaact catgtttaaa gttcttggac 1260
ttctcccaaa agctccaagc ttacatgaag gtgaaactag tgtgacagaa gattataagg 1320
aagcagcttc ttctagttga 1340

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<211> 374

<212> PRT
<213> Glycine max

<400> 12

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His Ser Ser Tyr Ala Tyr Ser Ser Ala Ser Ala Ala Ala Ile Gln Ala
            20                  25                  30

Glu Arg Ala Ile Lys Glu Gly Pro Arg Asn Asp Trp Ser Arg Asp Gln
        35                  40                  45

Val Lys Ser Ile Tyr Asp Ser Pro Ile Leu Asp Leu Leu Phe His Gly
    50                  55                  60

Ala Gln Val His Arg His Ala His Asn Phe Arg Glu Val Gln Gln Cys
65                  70                  75                  80

Thr Leu Leu Ser Ile Lys Thr Gly Gly Cys Ser Glu Asp Cys Ser Tyr
                85                  90                  95

Cys Pro Gln Ser Ser Lys Tyr Asp Thr Gly Val Lys Arg Pro Ser Leu
            100                 105                 110

Met Asn Lys Glu Ala Val Leu Gln Ala Ala Lys Lys Ala Lys Glu Ala
        115                 120                 125

Gly Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Asp Thr Leu Gly
    130                 135                 140

Arg Lys Thr Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Asp Ile Arg
145                 150                 155                 160

Asp Met Gly Met Glu Val Cys Cys Thr Leu Gly Met Leu Glu Lys Gln
                165                 170                 175

Gln Ala Val Glu Leu Lys Lys Ala Gly Leu Thr Ala Tyr Asn His Asn
            180                 185                 190

Leu Asp Thr Ser Arg Glu Tyr Tyr Pro Asn Ile Ile Thr Thr Arg Thr
        195                 200                 205

Tyr Asp Glu Arg Leu Gln Thr Leu Glu Phe Val Arg Asp Ala Gly Ile
    210                 215                 220

Asn Val Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu Ala Glu Glu Asp
225                 230                 235                 240

Arg Val Gly Leu Leu His Thr Leu Ser Thr Leu Pro Thr His Pro Glu
                245                 250                 255

Ser Val Pro Ile Asn Ala Leu Val Ala Val Lys Gly Thr Pro Leu Glu
            260                 265                 270

Asp Gln Lys Pro Val Glu Ile Trp Glu Met Ile Arg Met Ile Ala Thr
        275                 280                 285

Ala Arg Ile Val Met Pro Lys Ala Met Val Arg Leu Ser Ala Gly Arg
    290                 295                 300
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Val Arg Phe Ser Met Pro Glu Gln Ala Leu Cys Phe Leu Ala Gly Ala
305 310 315 320

Asn Ser Ile Phe Thr Gly Glu Lys Leu Leu Thr Thr Pro Asn Asn Asp
325 330 335

Phe Asp Ala Asp Gln Leu Met Phe Lys Val Leu Gly Leu Leu Pro Lys
340 345 350

Ala Pro Ser Leu His Glu Gly Glu Thr Ser Val Thr Glu Asp Tyr Lys
355 360 365

Glu Ala Ala Ser Ser Ser
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<210> 13
<211> 479
<212> DNA
<213> Glycine max

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cgtatcatct gttcctcctc aagctacaga aacatcaagc acatcaccta gtaaggatgt 180
ctaccaagaa gcactcaacg caactgaacc ccgcagcaat tggacaagag aagaaatcaa 240
ggcgatctat gataagccat tgatggagtt atgttggggt gctggtagtt tgcacaggaa 300
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<210> 14
<211> 52
<212> PRT
<213> Glycine max

<400> 14
Arg Ser Asn Trp Thr Arg Glu Glu Ile Lys Ala Ile Tyr Asp Lys Pro
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Leu Met Glu Leu Cys Trp Gly Ala Gly Ser Leu His Arg Lys Phe His
20 25 30

Ile Pro Gly Ala Ile Gln Met Cys Thr Leu Leu Asn Ile Lys Thr Gly
35 40 45

Gly Cys Ser Glu
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<210> 15
<211> 589
<212> DNA
<213> Triticum aestivum

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<222> (577)..(578)

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acaacaagct gaagaactcc aagaaggctg gactttacag cttataatca taacctaaga 240
tacatccaag agaatattac ccccaacatt tattcctaca agattccgtt accgatggat 300
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<210> 16
<211> 78
<212> PRT
<213> Triticum aestivum

<220>
<221> UNSURE
<222> (69)

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Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg Lys Thr
20 25 30

Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Asp Ile Arg Gly Met Gly
35 40 45

Met Glu Val Cys Cys Thr Leu Gly Met Leu Glu Lys Gln Gln Ala Glu
50 55 60

Glu Leu Gln Glu Xaa Asp Phe Thr Ala Tyr Asn His Asn Leu
65 70 75

<210> 17
<211> 1396
<212> DNA
<213> Hordeum vulgare

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cccgattttg catgggagcc gcatggagag agacaattgg caggaaaaca aacttcaacc 540
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<210> 18
<211> 405
<212> PRT
<213> Hordeum vulgare

<400> 18
Thr Thr Thr Pro Ser Ala Val Ser Pro Ser Ala Ala Ala Ala Pro Phe
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Arg Pro Ala Leu Leu Ala Glu Pro Ala Met Met Leu Leu Leu Ala Arg
20 25 30

Ser Leu Arg Ser Arg Val Arg Ser Pro Phe Ala Ser Ala Val Ser Ala
35 40 45

Ala Pro Phe Ser Ser Val Ser Ala Ala Ala Ala Glu Ala Glu Arg Ala
50 55 60

Val Arg Asp Gly Pro Arg Asn Asp Trp Thr Arg Pro Glu Ile Gln Ala
65 70 75 80

Ile Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Ala Gln Val
85 90 95

His Arg Asn Val His Lys Phe Arg Glu Val Gln Gln Cys Thr Leu Leu
100 105 110

Ser Ile Lys Thr Gly Gly Cys Ser Glu Asp Cys Ser Tyr Cys Pro Gln
115 120 125

Ser Ser Arg Tyr Ser Thr Gly Leu Lys Ala Glu Lys Leu Met Lys Lys
130 135 140

Asp Ala Val Leu Glu Ala Ala Lys Lys Ala Lys Glu Ala Gly Ser Thr
145 150 155 160

Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg Lys Thr
165 170 175

Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Asp Ile Arg Gly Met Gly
180 185 190

Met Glu Val Cys Cys Thr Leu Gly Met Leu Glu Lys Gln Gln Ala Glu
195 200 205

Glu Leu Lys Lys Ala Gly Leu Thr Ala Tyr Asn His Asn Leu Asp Thr
210 215 220

Ser Arg Glu Tyr Tyr Pro Asn Ile Ile Ser Thr Arg Ser Tyr Asp Asp
225 230 235 240

Arg Leu Gln Thr Leu Gln His Val Arg Glu Ala Gly Ile Ser Val Cys
245 250 255

Ser Gly Gly Ile Ile Gly Leu Gly Glu Ala Glu Glu Asp Arg Val Gly
260 265 270

Leu Leu His Thr Leu Ala Thr Leu Pro Thr His Pro Glu Ser Val Pro
275 280 285

Ile Asn Ala Leu Ile Ala Val Lys Gly Thr Pro Leu Gln Asp Gln Lys
290 295 300

Pro Val Glu Ile Trp Glu Met Ile Arg Met Ile Ala Ser Ala Arg Ile
305 310 315 320

Val Met Pro Lys Ala Met Val Arg Leu Ser Ala Gly Arg Val Arg Phe
325 330 335

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Ser Met Pro Glu Gln Ala Leu Cys Phe Leu Ala Gly Ala Asn Ser Ile
            340                 345                 350

Phe Ala Gly Glu Lys Leu Leu Thr Thr Ala Asn Asn Asp Phe Asp Ala
        355                 360                 365

Asp Gln Ala Met Phe Lys Ile Leu Gly Leu Ile Pro Lys Ala Pro Asn
    370                 375                 380

Phe Gly Asp Glu Glu Ala Thr Val Ala Ser Ser Thr Glu Arg Cys Glu
385                 390                 395                 400

Gln Ala Ala Ser Met
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<210> 19
<211> 1467
<212> DNA
<213> Zea mays

<400> 19

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cgcccgctgc tcctctatcc ctttcctgct gctgctacta ccttaagcta tcactatcat  180
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cgcggcgttc tcgtcggccg cggcggaggc ggagagggcg atacgggacg ggccgcggaa  300
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<210> 20
<211> 344
<212> PRT
<213> Zea mays

<400> 20

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Pro Leu Ala Ala Ala Ala Ala Phe Ser Ser Ala Ala Ala Glu Ala Glu
            20                  25                  30
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Arg Ala Ile Arg Asp Gly Pro Arg Asn Asp Trp Ser Arg Pro Glu Ile
         35                  40                  45

Gln Ala Val Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Ala
     50                  55                  60

Gln Ser Ser Arg Tyr Asn Thr Gly Leu Lys Ala Gln Lys Leu Met Asn
 65                  70                  75                  80

Lys Tyr Ala Val Leu Glu Ala Ala Lys Lys Ala Lys Glu Ser Gly Ser
                 85                  90                  95

Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg Lys
            100                 105                 110

Ser Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Glu Ile Arg Gly Met
        115                 120                 125

Gly Met Glu Val Cys Cys Thr Leu Gly Met Ile Glu Lys Gln Gln Ala
    130                 135                 140

Glu Glu Leu Lys Lys Ala Gly Leu Thr Ala Tyr Asn His Asn Leu Asp
145                 150                 155                 160

Thr Ser Arg Glu Tyr Tyr Pro Asn Ile Ile Thr Thr Arg Ser Tyr Asp
                165                 170                 175

Asp Arg Leu Gln Thr Leu Glu His Val Arg Glu Ala Gly Ile Ser Ile
            180                 185                 190

Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu Ala Glu Glu Asp Arg Val
        195                 200                 205

Gly Leu Leu His Thr Leu Ala Thr Leu Pro Thr His Pro Glu Ser Val
    210                 215                 220

Pro Ile Asn Ala Leu Val Ala Val Lys Gly Thr Pro Leu Glu Asp Gln
225                 230                 235                 240

Lys Pro Val Glu Ile Trp Glu Met Ile Arg Met Ile Ala Thr Ala Arg
                245                 250                 255

Ile Thr Met Pro Lys Ala Met Val Arg Leu Ser Ala Gly Arg Val Arg
            260                 265                 270

Phe Ser Met Pro Glu Gln Ala Leu Cys Phe Leu Ala Gly Ala Asn Ser
        275                 280                 285

Ile Phe Ala Gly Glu Lys Leu Leu Thr Thr Ala Asn Asn Asp Phe Asp
    290                 295                 300

Ala Asp Gln Ala Met Phe Lys Ile Leu Gly Leu Ile Pro Lys Ala Pro
305                 310                 315                 320

Ser Phe Gly Glu Glu Glu Ala Ser Ala Ala Ala Pro Thr Glu Ser Glu
                325                 330                 335

Arg Ser Glu Gln Ala Ala Ser Met
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<210> 21
<211> 1515
<212> DNA
<213> Zea mays

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ttaagctatc atggccttga tgctgctagc gcgcaacctg cgctcccgcc tccgcccacc 180
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<210> 22
<211> 377
<212> PRT
<213> Zea mays

<400> 22
Met Ala Leu Met Leu Leu Ala Arg Asn Leu Arg Ser Arg Leu Arg Pro
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Pro Leu Ala Ala Ala Ala Ala Phe Ser Ser Ala Ala Ala Glu Ala Glu
20 25 30

Arg Ala Ile Arg Asp Gly Pro Arg Asn Asp Trp Ser Arg Pro Glu Ile
35 40 45

Gln Ala Val Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Ala
50 55 60

Gln Val His Arg Asn Val His Lys Phe Arg Glu Val Gln Gln Cys Thr
65 70 75 80

Leu Leu Ser Ile Lys Thr Gly Gly Cys Ser Glu Asp Cys Ser Tyr Cys
85 90 95

Pro Gln Ser Ser Arg Tyr Asn Thr Gly Leu Lys Ala Gln Lys Leu Met
100 105 110

Asn Lys Asp Ala Val Leu Glu Ala Ala Lys Lys Ala Lys Glu Ser Gly
115 120 125

Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg
130 135 140

Lys Ser Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Glu Ile Arg Gly
145 150 155 160

Met Gly Met Glu Val Cys Cys Thr Leu Gly Met Ile Glu Lys Gln Gln
165 170 175

Ala Glu Glu Leu Lys Lys Ala Gly Leu Thr Ala Tyr Asn His Asn Leu
180 185 190

Asp Thr Ser Arg Glu Tyr Tyr Pro Asn Ile Ile Thr Thr Arg Ser Tyr
195 200 205

Asp Asp Arg Leu Gln Thr Leu Glu His Val Arg Glu Ala Gly Ile Ser
210 215 220

Ile Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu Ala Glu Glu Asp Arg
225 230 235 240

Val Gly Leu Leu His Thr Leu Ala Thr Leu Pro Thr His Pro Glu Ser
245 250 255

Val Pro Ile Asn Ala Leu Val Ala Val Lys Gly Thr Pro Leu Glu Asp
260 265 270

Gln Lys Pro Val Glu Ile Trp Glu Met Ile Arg Met Ile Ala Thr Ala
275 280 285

Arg Ile Thr Met Pro Lys Ala Met Val Arg Leu Ser Ala Gly Arg Val
290 295 300

Arg Phe Ser Met Pro Glu Gln Ala Leu Cys Phe Leu Ala Gly Ala Asn
305 310 315 320

Ser Ile Phe Ala Gly Glu Lys Leu Leu Thr Thr Ala Asn Asn Asp Phe
325 330 335

Asp Ala Asp Gln Ala Met Phe Lys Ile Leu Gly Leu Ile Pro Lys Ala
340 345 350

Pro Ser Phe Gly Glu Glu Glu Val Ser Ala Ala Ala Pro Ala Glu Ser
355 360 365

Glu Arg Ser Glu Gln Ala Ala Ser Met
370 375

<210> 23
<211> 1439
<212> DNA
<213> Zea mays

<400> 23
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<210> 24
<211> 377
<212> PRT
<213> Zea mays

<400> 24
Met Ala Leu Met Leu Leu Ala Arg Asn Leu Arg Ser Arg Leu Arg Pro
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Pro Leu Ala Ala Ala Ala Ala Phe Ser Ser Ala Ala Ala Glu Ala Glu
20 25 30

Arg Ala Ile Arg Asp Gly Pro Arg Asn Asp Trp Ser Arg Pro Glu Ile
35 40 45

Gln Ala Val Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Ala
50 55 60

Gln Val His Arg Asn Val His Lys Phe Arg Glu Val Gln Gln Cys Thr
65 70 75 80

Leu Leu Ser Ile Lys Thr Gly Gly Cys Ser Glu Asp Cys Ser Tyr Cys
85 90 95

Pro Gln Ser Ser Arg Tyr Asn Thr Gly Leu Lys Ala Gln Lys Leu Met
100 105 110

Asn Lys Tyr Ala Val Leu Glu Ala Ala Lys Lys Ala Lys Glu Ser Gly
115 120 125

Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg
130 135 140

Lys Ser Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Glu Ile Arg Gly
145 150 155 160

Met Gly Met Glu Val Cys Cys Thr Leu Gly Met Ile Glu Lys Gln Gln
165 170 175

Ala Glu Glu Leu Lys Lys Ala Gly Leu Thr Ala Tyr Asn His Asn Leu
180 185 190

Asp Thr Ser Arg Glu Tyr Tyr Pro Asn Ile Ile Thr Thr Arg Ser Tyr
195 200 205

Asp Asp Arg Leu Gln Thr Leu Glu His Val Arg Glu Ala Gly Ile Ser
210 215 220

Ile Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu Ala Glu Glu Asp Arg
225 230 235 240

Val Gly Leu Leu His Thr Leu Ala Thr Leu Pro Thr His Pro Glu Ser
245 250 255

Val Pro Ile Asn Ala Leu Val Ala Val Lys Gly Thr Pro Leu Glu Asp
260 265 270

Gln Lys Pro Val Glu Ile Trp Glu Met Ile Arg Met Ile Ala Thr Ala
275 280 285

Arg Ile Thr Met Pro Lys Ala Met Val Arg Leu Ser Ala Gly Arg Val
290 295 300

Arg Phe Ser Met Pro Glu Gln Ala Leu Cys Phe Leu Ala Gly Ala Asn
305 310 315 320

Ser Ile Phe Ala Gly Glu Lys Leu Leu Thr Thr Ala Asn Asn Asp Phe
325 330 335

Asp Ala Asp Gln Ala Met Phe Lys Ile Leu Gly Leu Ile Pro Lys Ala
340 345 350

Pro Ser Phe Gly Glu Glu Glu Ala Ser Ala Ala Ala Pro Thr Glu Ser
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Glu Arg Ser Glu Gln Ala Ala Ser Met
370 375

<210> 25
<211> 1477
<212> DNA
<213> Argemone mexicana

<400> 25
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aagcagggat caatgtctgc tcaggaggaa taatagggct aggagaagca gaggaggatc 840

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<210> 26
<211> 379
<212> PRT
<213> Argemone mexicana

<400> 26

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Met Leu Lys Val Gln Ser Leu Arg Ala Arg Leu Arg Pro Leu Ile Phe
  1               5                  10                  15

Ile Ser Thr Phe Ser Ser Leu Ser Ser Ser Ser Ser Ser Ser Ala Ala
             20                  25                  30

Ala Val Gln Ala Glu Arg Thr Ile Lys Glu Gly Pro Arg Asn Asp Trp
         35                  40                  45

Ser Arg Asp Glu Ile Lys Ser Val Tyr Asp Ser Pro Val Leu Asp Leu
     50                  55                  60

Leu Phe His Ala Ala Gln Val His Arg His Ala His Asn Phe Arg Glu
 65                  70                  75                  80

Val Gln Gln Cys Thr Leu Leu Ser Val Lys Thr Gly Gly Cys Ser Glu
                 85                  90                  95

Asp Cys Ser Tyr Cys Pro Gln Ser Ser Arg Tyr Asp Thr Gly Val Lys
            100                 105                 110

Ala Gln Lys Leu Met Asn Lys Asp Ala Val Leu Gln Ala Ala Glu Lys
        115                 120                 125

Ala Lys Glu Ala Gly Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg
    130                 135                 140

Asp Thr Val Gly Arg Lys Thr Asn Phe Lys Gln Ile Leu Glu Tyr Val
145                 150                 155                 160

Lys Glu Ile Arg Gly Met Gly Met Glu Val Cys Cys Thr Leu Gly Met
                165                 170                 175

Ile Glu Lys Gln Gln Ala Val Glu Leu Lys Gln Ala Gly Leu Thr Ala
            180                 185                 190

Tyr Asn His Asn Leu Asp Thr Ser Arg Glu Tyr Tyr Pro Asn Ile Ile
        195                 200                 205

Thr Thr Arg Ser Tyr Asp Glu Arg Leu Glu Thr Leu Gln Phe Val Arg
    210                 215                 220
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Glu Ala Gly Ile Asn Val Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu
225                 230                 235                 240

Ala Glu Glu Asp Arg Val Gly Leu Leu His Thr Leu Ala Thr Leu Pro
                245                 250                 255

Ser His Pro Glu Ser Val Pro Ile Asn Ala Leu Leu Ala Val Lys Gly
            260                 265                 270

Thr Pro Leu Glu Asp Gln Lys Pro Val Glu Ile Trp Glu Met Ile Arg
        275                 280                 285

Met Ile Ala Thr Ala Arg Ile Val Met Pro Lys Ala Met Val Arg Leu
    290                 295                 300

Ser Ala Gly Arg Val Arg Phe Ser Met Ser Glu Gln Ala Leu Cys Phe
305                 310                 315                 320

Leu Ala Gly Ala Asn Ser Ile Phe Thr Gly Glu Lys Leu Leu Thr Thr
                325                 330                 335

Pro Asn Asn Asp Phe Asp Ala Asp Gln Met Met Phe Lys Ile Leu Gly
            340                 345                 350

Leu Thr Pro Lys Ala Pro Asn Phe Asp Gln Thr Ser Thr Ser Phe Glu
        355                 360                 365

Ala Glu Arg Cys Glu Gln Glu Ala Thr Ala Ser
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<210> 27
<211> 1526
<212> DNA
<213> Glycine max

<400> 27
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aatctcagct ttgaagacac aaactccaac acttaaaaat aaatattgaa attattgatt 1500
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<210> 28
<211> 415
<212> PRT
<213> Glycine max

<400> 28

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Thr Lys Pro Asn Pro Lys His Lys Tyr Arg Cys Cys Leu Leu Ser Leu
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Ser Cys Leu Tyr Ser Gln Ile Ser His Ser Phe Ser Val Val Ser Leu
             20                  25                  30

Pro Asn Phe Glu Phe Glu Ser Lys Asn Met Phe Leu Ala Arg Pro Ile
         35                  40                  45

Phe Arg Ala Pro Ser Leu Trp Ala Leu His Ser Ser Tyr Ala Tyr Ser
     50                  55                  60

Ser Ala Ser Ala Ala Ala Ile Gln Ala Glu Arg Ala Ile Lys Glu Gly
 65                  70                  75                  80

Pro Arg Asn Asp Trp Ser Arg Asp Gln Val Lys Ser Ile Tyr Asp Ser
                 85                  90                  95

Pro Ile Leu Asp Leu Leu Phe His Gly Ala Gln Val His Arg His Ala
            100                 105                 110

His Asn Phe Arg Glu Val Gln Gln Cys Thr Leu Leu Ser Ile Lys Thr
        115                 120                 125

Gly Gly Cys Ser Glu Asp Cys Ser Tyr Cys Pro Gln Ser Ser Lys Tyr
    130                 135                 140

Asp Thr Gly Val Lys Gly Gln Arg Leu Met Asn Lys Glu Ala Val Leu
145                 150                 155                 160

Gln Ala Ala Lys Lys Ala Lys Glu Ala Gly Ser Thr Arg Phe Cys Met
                165                 170                 175

Gly Ala Ala Trp Arg Asp Thr Leu Gly Arg Lys Thr Asn Phe Asn Gln
            180                 185                 190

Ile Leu Glu Tyr Val Lys Asp Ile Arg Asp Met Gly Met Glu Val Cys
        195                 200                 205

Cys Thr Leu Gly Met Leu Glu Lys Gln Gln Ala Val Glu Leu Lys Lys
    210                 215                 220

Ala Gly Leu Thr Ala Tyr Asn His Asn Leu Asp Thr Ser Arg Glu Tyr
225                 230                 235                 240

Tyr Pro Asn Ile Ile Thr Thr Arg Thr Tyr Asp Glu Arg Leu Gln Thr
                245                 250                 255

Leu Glu Phe Val Arg Asp Ala Gly Ile Asn Val Cys Ser Gly Gly Ile
            260                 265                 270
```

Ile Gly Leu Gly Glu Ala Glu Glu Asp Arg Val Gly Leu Leu His Thr
275 280 285

Leu Ser Thr Leu Pro Thr His Pro Glu Ser Val Pro Ile Asn Ala Leu
290 295 300

Val Ala Val Lys Gly Thr Pro Leu Glu Asp Gln Lys Pro Val Glu Ile
305 310 315 320

Trp Glu Met Ile Arg Met Ile Ala Thr Ala Arg Ile Val Met Pro Lys
325 330 335

Ala Met Val Arg Leu Ser Ala Gly Arg Val Arg Phe Ser Met Pro Glu
340 345 350

Gln Ala Leu Cys Phe Leu Ala Gly Ala Asn Ser Ile Phe Thr Gly Glu
355 360 365

Lys Leu Leu Thr Thr Pro Asn Asn Asp Phe Asp Ala Asp Gln Leu Met
370 375 380

Phe Lys Val Leu Gly Leu Leu Pro Lys Ala Pro Ser Leu His Glu Gly
385 390 395 400

Glu Thr Ser Val Thr Glu Asp Tyr Lys Glu Ala Ala Ser Ser Ser
405 410 415

<210> 29
<211> 1659
<212> DNA
<213> Glycine max

<400> 29
aaagagtgta tacagataga tttccaaact ccactcactc accactatgg cgactctcag 60
aacttcccta tcacgatccc tcatcctcct tcgctccaat acccctaaac tcgcacctat 120
ctcttcctct gttcgtcttc aagttcaaaa gtcgagaaac tatggtaccg tatcatctgt 180
tcctcctcaa gctacagaaa catcaagcac atcacctagt aaggatgtct accaagaagc 240
actcaacgca actgaacccc gcagcaattg gacaagagaa gaaatcaagg cgatctatga 300
taagccattg atggagttat gttggggtgc tggtagtttg cacaggaaat tccatatacc 360
tggggctatt cagatgtgta cattgttgaa catcaagacg ggtggttgct cggaggattg 420
ttcttactgc gcccaatcat cccgctacca aaccggtctc aaagcctcca aaatggtctc 480
cgtcgaatct gtcctcgcag ccgcccgcat cgccaaagac aacggtagta cacgtttctg 540
catgggagcc gcgtggcgcg atatgcgtgg acgaaaaacc aatctcaaaa atgtcaaaac 600
aatggttagc gagattcgcg gaatgggtat ggaagtatgt gtcacgcttg gtatgattga 660
tgcagagcaa gctcaggaac tcaaagaagc cggtctcacg gcttataatc ataatgtgga 720
tacgtcgagg gatttctatc ccaaggttat cacgaccagg acttatgatg agagattgga 780
taccattaag aatgtgagag aggccggaat caatgtttgt acgggtggaa tcctcggatt 840
aggagaaaat aagtctgacc atattggact tttggagacg gttgctacgt tgccttcgca 900
tccggaatca tttcctgtga acatgttagt ggctatcaaa ggaacaccac tggaaggaaa 960
caagaaggtg gaatttgaga atatgttgag aatggttgcg acggctagaa tcgtcatgcc 1020
taaaaccatc gtgcgtttgg cagctggaag aggagaattg agcgaggaac aacaggtctt 1080
atgtttcatg gccggagcca atgccgtttt cacaggagaa acaatgttaa ccacaccagc 1140
cgttggatgg ggtgtcgatt ccgtcgtttt caacagatgg ggattaagac ccatggaaag 1200
tttcgaggtt gaagccttga agaacgataa acctgccact actaatacgg aaataccggt 1260
agaggcaagt aaggcagaga tgccaggtac agttgcttga ttgattgttt gatttggata 1320
cccagggcgt ttggtgcgct catcatctcg agtttttgca aggagattcg aacagtggaa 1380
gtgccgttgc gccaccattg ggattggcgt atcggactga gattgactgt gccacgaaaa 1440
tgttttgcgc tatcgtgtgt tgtcatctcg tgggaattta gcgttgtttg ttttgttttt 1500
ggttttgttt gatgtgagag aatgattgtt tagaagggga gaatgtatat acggaacagt 1560

agaatatatt cttgtctata agattatata ggataaatat atataagctt atcctcaaaa 1620
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaa 1659

<210> 30
<211> 417
<212> PRT
<213> Glycine max

<400> 30

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Met Ala Thr Leu Arg Thr Ser Leu Ser Arg Ser Leu Ile Leu Leu Arg
  1               5                  10                  15

Ser Asn Thr Pro Lys Leu Ala Pro Ile Ser Ser Ser Val Arg Leu Gln
             20                  25                  30

Val Gln Lys Ser Arg Asn Tyr Gly Thr Val Ser Ser Val Pro Pro Gln
         35                  40                  45

Ala Thr Glu Thr Ser Ser Thr Ser Pro Ser Lys Asp Val Tyr Gln Glu
     50                  55                  60

Ala Leu Asn Ala Thr Glu Pro Arg Ser Asn Trp Thr Arg Glu Glu Ile
 65                  70                  75                  80

Lys Ala Ile Tyr Asp Lys Pro Leu Met Glu Leu Cys Trp Gly Ala Gly
                 85                  90                  95

Ser Leu His Arg Lys Phe His Ile Pro Gly Ala Ile Gln Met Cys Thr
            100                 105                 110

Leu Leu Asn Ile Lys Thr Gly Gly Cys Ser Glu Asp Cys Ser Tyr Cys
        115                 120                 125

Ala Gln Ser Ser Arg Tyr Gln Thr Gly Leu Lys Ala Ser Lys Met Val
    130                 135                 140

Ser Val Glu Ser Val Leu Ala Ala Ala Arg Ile Ala Lys Asp Asn Gly
145                 150                 155                 160

Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Asp Met Arg Gly Arg
                165                 170                 175

Lys Thr Asn Leu Lys Asn Val Lys Thr Met Val Ser Glu Ile Arg Gly
            180                 185                 190

Met Gly Met Glu Val Cys Val Thr Leu Gly Met Ile Asp Ala Glu Gln
        195                 200                 205

Ala Gln Glu Leu Lys Glu Ala Gly Leu Thr Ala Tyr Asn His Asn Val
    210                 215                 220

Asp Thr Ser Arg Asp Phe Tyr Pro Lys Val Ile Thr Thr Arg Thr Tyr
225                 230                 235                 240

Asp Glu Arg Leu Asp Thr Ile Lys Asn Val Arg Glu Ala Gly Ile Asn
                245                 250                 255

Val Cys Thr Gly Gly Ile Leu Gly Leu Gly Glu Asn Lys Ser Asp His
            260                 265                 270
```

```
Ile Gly Leu Leu Glu Thr Val Ala Thr Leu Pro Ser His Pro Glu Ser
        275                 280                 285

Phe Pro Val Asn Met Leu Val Ala Ile Lys Gly Thr Pro Leu Glu Gly
    290                 295                 300

Asn Lys Lys Val Glu Phe Glu Asn Met Leu Arg Met Val Ala Thr Ala
305                 310                 315                 320

Arg Ile Val Met Pro Lys Thr Ile Val Arg Leu Ala Ala Gly Arg Gly
                325                 330                 335

Glu Leu Ser Glu Glu Gln Gln Val Leu Cys Phe Met Ala Gly Ala Asn
            340                 345                 350

Ala Val Phe Thr Gly Glu Thr Met Leu Thr Thr Pro Ala Val Gly Trp
        355                 360                 365

Gly Val Asp Ser Val Val Phe Asn Arg Trp Gly Leu Arg Pro Met Glu
    370                 375                 380

Ser Phe Glu Val Glu Ala Leu Lys Asn Asp Lys Pro Ala Thr Thr Asn
385                 390                 395                 400

Thr Glu Ile Pro Val Glu Ala Ser Lys Ala Glu Met Pro Gly Thr Val
                405                 410                 415

Ala
```

<210> 31
<211> 1032
<212> DNA
<213> Triticum aestivum

<400> 31

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gcacgagaga tgccgtccta gaagcagcaa aaaaggcaaa ggaggctggg agcacccgat   60
tttgcatggg agccgcatgg agagagacaa ttggcaggaa aacaaatttc aaccagattc  120
ttgaatatgt caaggacata agaggtatgg gcatggaggt ctgttgcacc ctgggcatgc  180
tagagaaaca acaagctgaa gaactcaaga aggctggact tacagcttat aatcataacc  240
tagatacatc aagagaatat taccccaaca ttatttctac aagatcgtac gatgatagat  300
tacagactct tcagcatgtc cgtgaagctg gaataagcgt ctgctcaggt ggaattattg  360
gtcttggaga ggcggaggaa gaccgtgtag ggctgttgca tacactggcc actttgccaa  420
cacacccaga gagcgttcct atcaatgcat tgattgctgt caaaggcacg cctcttcagg  480
atcagaagcc tgtagagata tgggaaatga tccgcatgat tgccagcgca cggattgtga  540
tgccaaaggc aatggtgaga ctttcggcag ggagagtacg gttttccatg ccagaacaag  600
ctctctgctt tctcgctggg gccaactcga tcttcgccgg tgaaaagctc ctgacaactg  660
cgaacaatga ctttgatgcg gaccaggcaa tgttcaagat ccttggcctg attcccaagg  720
ctccaaactt tggcgatgaa gaggtcatgg tagcagcacc cacggagaga tgtgagcaag  780
ccgctttgat gtaaaatgtc ggtatagatt ctcgagacca catccggtgc aaaactggca  840
ccattatctc cacctagagt tttgtactgt agagatcatg acattttata gtaacttcag  900
attcatcgaa ataaaatagg gggttctctg caaaaaaaaa aaaaaaaaaa aaaaaaaaaa  960
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1020
aaaaaaaaaa aa                                                      1032
```

<210> 32
<211> 263
<212> PRT
<213> Triticum aestivum

<400> 32
Thr Arg Asp Ala Val Leu Glu Ala Ala Lys Lys Ala Lys Glu Ala Gly
1 5 10 15

Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg
20 25 30

Lys Thr Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Asp Ile Arg Gly
35 40 45

Met Gly Met Glu Val Cys Cys Thr Leu Gly Met Leu Glu Lys Gln Gln
50 55 60

Ala Glu Glu Leu Lys Lys Ala Gly Leu Thr Ala Tyr Asn His Asn Leu
65 70 75 80

Asp Thr Ser Arg Glu Tyr Tyr Pro Asn Ile Ile Ser Thr Arg Ser Tyr
85 90 95

Asp Asp Arg Leu Gln Thr Leu Gln His Val Arg Glu Ala Gly Ile Ser
100 105 110

Val Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu Ala Glu Glu Asp Arg
115 120 125

Val Gly Leu Leu His Thr Leu Ala Thr Leu Pro Thr His Pro Glu Ser
130 135 140

Val Pro Ile Asn Ala Leu Ile Ala Val Lys Gly Thr Pro Leu Gln Asp
145 150 155 160

Gln Lys Pro Val Glu Ile Trp Glu Met Ile Arg Met Ile Ala Ser Ala
165 170 175

Arg Ile Val Met Pro Lys Ala Met Val Arg Leu Ser Ala Gly Arg Val
180 185 190

Arg Phe Ser Met Pro Glu Gln Ala Leu Cys Phe Leu Ala Gly Ala Asn
195 200 205

Ser Ile Phe Ala Gly Glu Lys Leu Leu Thr Thr Ala Asn Asn Asp Phe
210 215 220

Asp Ala Asp Gln Ala Met Phe Lys Ile Leu Gly Leu Ile Pro Lys Ala
225 230 235 240

Pro Asn Phe Gly Asp Glu Glu Val Met Val Ala Ala Pro Thr Glu Arg
245 250 255

Cys Glu Gln Ala Ala Leu Met
260

<210> 33
<211> 378
<212> PRT
<213> Arabidopsis thaliana

<400> 33
Met Met Leu Val Arg Ser Val Phe Arg Ser Gln Leu Arg Pro Ser Val
1 5 10 15

Ser Gly Gly Leu Gln Ser Ala Ser Cys Tyr Ser Ser Leu Ser Ala Ala
20 25 30

Ser Ala Glu Ala Glu Arg Thr Ile Arg Glu Gly Pro Arg Asn Asp Trp
35 40 45

Ser Arg Asp Glu Ile Lys Ser Val Tyr Asp Ser Pro Leu Leu Asp Leu
50 55 60

Leu Phe His Gly Ala Gln Val His Arg His Val His Asn Phe Arg Glu
65 70 75 80

Val Gln Gln Cys Thr Leu Leu Ser Ile Lys Thr Gly Gly Cys Ser Glu
85 90 95

Asp Cys Ser Tyr Cys Pro Gln Ser Ser Arg Tyr Ser Thr Gly Val Lys
100 105 110

Ala Gln Arg Leu Met Ser Lys Asp Ala Val Ile Asp Ala Ala Lys Lys
115 120 125

Ala Lys Glu Ala Gly Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg
130 135 140

Asp Thr Ile Gly Arg Lys Thr Asn Phe Ser Gln Ile Leu Glu Tyr Ile
145 150 155 160

Lys Glu Ile Arg Gly Met Gly Met Glu Val Cys Cys Thr Leu Gly Met
165 170 175

Ile Glu Lys Gln Gln Ala Leu Glu Leu Lys Lys Ala Gly Leu Thr Ala
180 185 190

Tyr Asn His Asn Leu Asp Thr Ser Arg Glu Tyr Tyr Pro Asn Val Ile
195 200 205

Thr Thr Arg Ser Tyr Asp Asp Arg Leu Glu Thr Leu Ser His Val Arg
210 215 220

Asp Ala Gly Ile Asn Val Cys Ser Gly Gly Ile Ile Gly Leu Gly Glu
225 230 235 240

Ala Glu Glu Asp Arg Ile Gly Leu Leu His Thr Leu Ala Thr Leu Pro
245 250 255

Ser His Pro Glu Ser Val Pro Ile Asn Ala Leu Leu Ala Val Lys Gly
260 265 270

Thr Pro Leu Glu Asp Gln Lys Pro Val Glu Ile Trp Glu Met Ile Arg
275 280 285

Met Ile Gly Thr Ala Arg Ile Val Met Pro Lys Ala Met Val Arg Leu
290 295 300

Ser Ala Gly Arg Val Arg Phe Ser Met Ser Glu Gln Ala Leu Cys Phe
305 310 315 320

Leu Ala Gly Ala Asn Ser Ile Phe Thr Gly Glu Lys Leu Leu Thr Thr
325 330 335

```
Pro Asn Asn Asp Phe Asp Ala Asp Gln Leu Met Phe Lys Thr Leu Gly
            340                 345                 350

Leu Ile Pro Lys Pro Pro Ser Phe Ser Glu Asp Asp Ser Glu Ser Glu
        355                 360                 365

Asn Cys Glu Lys Val Ala Ser Ala Ser His
    370                 375
```

<210> 34
<211> 363
<212> PRT
<213> Schizosaccharomyces pombe

<400> 34

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Met Phe Thr Arg Thr Ile Arg Gln Gln Ile Arg Arg Ser Ser Ala Leu
  1               5                  10                  15

Ser Leu Val Arg Asn Asn Trp Thr Arg Glu Glu Ile Gln Lys Ile Tyr
            20                  25                  30

Asp Thr Pro Leu Ile Asp Leu Ile Phe Arg Ala Ala Ser Ile His Arg
        35                  40                  45

Lys Phe His Asp Pro Lys Lys Val Gln Gln Cys Thr Leu Leu Ser Ile
    50                  55                  60

Lys Thr Gly Gly Cys Thr Glu Asp Cys Lys Tyr Cys Ala Gln Ser Ser
65                  70                  75                  80

Arg Tyr Asn Thr Gly Val Lys Ala Thr Lys Leu Met Lys Ile Asp Glu
                85                  90                  95

Val Leu Glu Lys Ala Lys Ile Ala Lys Ala Lys Gly Ser Thr Arg Phe
            100                 105                 110

Cys Met Gly Ser Ala Trp Arg Asp Leu Asn Gly Arg Asn Arg Thr Phe
        115                 120                 125

Lys Asn Ile Leu Glu Ile Ile Lys Glu Val Arg Ser Met Asp Met Glu
    130                 135                 140

Val Cys Val Thr Leu Gly Met Leu Asn Glu Gln Gln Ala Lys Glu Leu
145                 150                 155                 160

Lys Asp Ala Gly Leu Thr Ala Tyr Asn His Asn Leu Asp Thr Ser Arg
                165                 170                 175

Glu Tyr Tyr Ser Lys Ile Ile Ser Thr Arg Thr Tyr Asp Glu Arg Leu
            180                 185                 190

Asn Thr Ile Asp Asn Leu Arg Lys Ala Gly Leu Lys Val Cys Ser Gly
        195                 200                 205

Gly Ile Leu Gly Leu Gly Glu Lys Lys His Asp Arg Val Gly Leu Ile
    210                 215                 220

His Ser Leu Ala Thr Met Pro Thr His Pro Glu Ser Val Pro Phe Asn
225                 230                 235                 240
```

Leu Leu Val Pro Ile Pro Gly Thr Pro Val Gly Asp Ala Val Lys Glu
245 250 255

Arg Leu Pro Ile His Pro Phe Leu Arg Ser Ile Ala Thr Ala Arg Ile
260 265 270

Cys Met Pro Lys Thr Ile Ile Arg Phe Ala Ala Gly Arg Asn Thr Cys
275 280 285

Ser Glu Ser Glu Gln Ala Leu Ala Phe Met Ala Gly Ala Asn Ala Val
290 295 300

Phe Thr Gly Glu Lys Met Leu Thr Thr Pro Ala Val Ser Trp Asp Ser
305 310 315 320

Asp Ser Gln Leu Phe Tyr Asn Trp Gly Leu Glu Gly Met Gln Ser Phe
325 330 335

Glu Tyr Gly Thr Ser Thr Glu Gly Glu Asp Gly Thr Phe Thr Leu Pro
340 345 350

Pro Lys Glu Arg Leu Ala Pro Ser Pro Ser Leu
355 360

<210> 35
<211> 375
<212> PRT
<213> Saccharomyces cerevisiae

<400> 35
Met Met Ser Thr Ile Tyr Arg His Leu Ser Thr Ala Arg Pro Ala Leu
1 5 10 15

Thr Lys Tyr Ala Thr Asn Ala Ala Val Lys Ser Thr Thr Ala Ser Ser
20 25 30

Glu Ala Ser Thr Leu Gly Ala Leu Gln Tyr Ala Leu Ser Leu Asp Glu
35 40 45

Pro Ser His Ser Trp Thr Lys Ser Gln Leu Lys Glu Ile Tyr His Thr
50 55 60

Pro Leu Leu Glu Leu Thr His Ala Ala Gln Leu Gln His Arg Lys Trp
65 70 75 80

His Asp Pro Thr Lys Val Gln Leu Cys Thr Leu Met Asn Ile Lys Ser
85 90 95

Gly Gly Cys Ser Glu Asp Cys Lys Tyr Cys Ala Gln Ser Ser Arg Asn
100 105 110

Asp Thr Gly Leu Lys Ala Glu Lys Met Val Lys Val Asp Glu Val Ile
115 120 125

Lys Glu Ala Glu Glu Ala Lys Arg Asn Gly Ser Thr Arg Phe Cys Leu
130 135 140

Gly Ala Ala Trp Arg Asp Met Lys Gly Arg Lys Ser Ala Met Lys Arg
145 150 155 160

Ile Gln Glu Met Val Thr Lys Val Asn Asp Met Gly Leu Glu Thr Cys
165 170 175

Val Thr Leu Gly Met Val Asp Gln Asp Gln Ala Lys Gln Leu Lys Asp
180 185 190

Ala Gly Leu Thr Ala Tyr Asn His Asn Ile Asp Thr Ser Arg Glu His
195 200 205

Tyr Ser Lys Val Ile Thr Thr Arg Thr Tyr Asp Asp Arg Leu Gln Thr
210 215 220

Ile Lys Asn Val Gln Glu Ser Gly Ile Lys Ala Cys Thr Gly Gly Ile
225 230 235 240

Leu Gly Leu Gly Glu Ser Glu Asp Asp His Ile Gly Phe Ile Tyr Thr
245 250 255

Leu Ser Asn Met Ser Pro His Pro Glu Ser Leu Pro Ile Asn Arg Leu
260 265 270

Val Ala Ile Lys Gly Thr Pro Met Ala Glu Glu Leu Ala Asp Pro Lys
275 280 285

Ser Lys Lys Leu Gln Phe Asp Glu Ile Leu Arg Thr Ile Ala Thr Ala
290 295 300

Arg Ile Val Met Pro Lys Ala Ile Ile Arg Leu Ala Ala Gly Arg Tyr
305 310 315 320

Thr Met Lys Glu Thr Glu Gln Phe Val Cys Phe Met Ala Gly Cys Asn
325 330 335

Ser Ile Phe Thr Gly Lys Lys Met Leu Thr Thr Met Cys Asn Gly Trp
340 345 350

Asp Glu Asp Lys Ala Met Leu Ala Lys Trp Gly Leu Gln Pro Met Glu
355 360 365

Ala Phe Lys Tyr Asp Arg Ser
370 375

<210> 36
<211> 12
<212> PRT
<213>

<400> 36
Gly Xaa Cys Xaa Glu Asp Cys Xaa Tyr Cys Xaa Gln
1 5 10